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ABSTRACT

A study of the effect of an "incremental" version of a generative rhetoric approach to writing instruction was conducted to determine whether such an approach would increase students' syntactic complexity. Ninety-eight college students were randomly assigned to one of five experimental or five control sections of a freshman composition course. In the control sections, students learned principles and rules from a rhetoric textbook and applied these in their writing assignments. Students in the experimental sections first went through a graduated sequence of source sentences, transformation models, and exercises, then wrote essays while continuing to make analogies and extrapolations according to the teacher's instructions. Both groups were pretested and posttested for punctuation and sentence combining and then assigned an exit essay. A comparison of the results from the two groups showed that when judged solely by gains in T-unit length, the "incremental" version of generative rhetoric yielded results similar to those obtained by "pure" sentence combining and generative rhetoric. The experimental treatment increased the syntactic variety of students' writing and increased the percentage of appropriate punctuation. (HTH)

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Teaching and Measuring Sentence Skills:

The Importance of Length, Variability, Variety, and Punctuation

by

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Teaching and Measuring Sentence Skills:

The Importance of Length, Variability, Variety, and Punctuation

Two methods of composition instruction currently focus on the development of syntactic complexity: sentence-combining (the history of which is reviewed by Mellon, 1979), and generative rhetoric (for which the definitive essays appear in Christensen and Christensen, 1978). Research into the effectiveness of both methods has relied mainly on a measure of length: the T-unit, or "terminable unit," signifying an independent clause and its non-independent modifiers. At the college level, such sentence-combining research is represented by Daiker, Kerek, and Morenberg (1978), Morenberg, Daiker, and Kerek (1978), and Swan (1979); experimental testing of generative rhetoric has been reported by Faigley (1979). Stewart (1978) and Evans (1979) similarly employ T-unit length as a fundamental measure in their studies of changes in syntax during high school and university years.

As Faigley notes, however, Francis Christensen thought the T-unit to be inadequate for distinguishing between effective and ineffective complexity (see "The Problem of Defining a Mature Style," Christensen and Christensen, 1978), and consequently recommended two further measures: the length of the base clause (relative shortness being a virtue) and the percentage of words in "free modifiers" (non-independent structures such as appositives and participial phrases), particularly the percentage of words in free modifiers that occur <u>after</u> a base clause. In other words, Christensen held that T-unit length should be supplemented by consideration of the way in which complexity is achieved (a consideration shared, though from different perspectives, by Schlesinger, 1968, and Williams, 1979). As his other essays make clear, Christensen believed the

variety of grammatical structures used by a writer to be an important index of good style at the college or adult level--a view always implicit in sentence-combining pedagogy, and explicit in Hunt's essay (1977) on "late-blooming transformations." Finally, a reading of Christensen suggests that greater attention should be paid, at the college level at least, to one of the very factors that the T-unit was designed to ignore: punctuation. As Hunt (1977) notes, the T-unit was adopted as an alternative to the sentence, since the young children whose writing Hunt was studying frequently employed run-on or fused independent clauses, making sentence length an unreliable index of syntactic complexity. For the purpose of measuring the growth of "syntactic maturity," a measure which ignores punctuation was ideal; for the purpose of teaching or evaluating good writing at the college level, it is something less so.

At the same time that Faigley was conducting his study of the effectiveness of generative rhetoric in developing syntactic complexity, we set out to test experimentally the effectiveness of our "incremental" version of the Christensen method (described in Broadhead and Berlin, 1981). We thought that the acquisition of writing skills by college-age writers might well parallel the manner in which very young children seem to acquire language itself. Susan Ervin-Tripp (1973), for example, has described the basic process by which a child learns to create plurals: he or she acquires a few familiar forms by imitation of adult (or other model) speech, develops his or her own system, learns new variants through more imitation, experiences a period of random fluctuation between the personal and conventional systems, and then stabilizes his or her utterances into adult patterns. More generally, at least three stages seem to be involved: (1) an ever-expanding observation and comprehension of adult (model) patterns; (2) continuous "imitation of particular instances" of

such patterns; and (3) the "building by analogy of classes and rules" (pp. 195, 203). Our method attempted to incorporate each of these stages, moving from observation of a few simple source sentences and transformations through imitation exercises to generalization of the techniques.

In addition to seeing whether our Christensen-oriented approach would increase students' syntactic complexity (as measured by the T-unit), we also sought to accomplish the following supplementary tasks in response to Christensen's remarks on "mature style": (1) to focus on the difference between base clause and T-unit length, rather than treating each as an independent measure of complexity; (2) to observe the variability of base-clause, T-unit, and sentence length by measuring each student's standard deviation from his or her mean (as in Kucera and Francis, 1962, and Cluett, 1976); (3) to determine the frequency and variety of free modifiers, both by type and by position, and to compare these against the writing of college teachers; (4) to examine the appropriateness of punctuation; and (5) to see what effect these various elements would have upon overall evaluation of students' free writing by teachers and independent readers.

Method

In our study, students were randomly assigned to one of five experimental or five control sections of English 101 (the first of a two-course freshman-level sequence), each of which was conducted by a teacher with at least five years' experience at the college level. Common textbooks, readers, and grammar handbooks were used by all sections. In conformance with the school's composition program guidelines, all sections were assigned at least 6,000 words of writing, including descriptive/narrative, analytical, and evaluative essays. In the control sections, a traditional method of instruction was employed: students learned

principles and rules in the rhetoric textbook, observed the principles and rules at work in the readings (discussed in class), and applied the principles and rules to their writing assignments, consulting the grammar/usage handbook when necessary.

In the experimental sections, the first six weeks of the semester were devoted to a graduated sequence of source sentences, transformation models, and exercises—predominantly for sentences, but also including paragraphs at the end of the sequence. Students first observed and imitated simple base clauses ("Jim laughed," "Jim drives a truck," "Jim is a plumber," "Jim is happy"), expanded them with bound modifiers (adjectives, adverbs, prepositional phrases), and then transformed them into free modifiers. For example, "Jim drives a truck" might be expanded and then transformed into a participial phrase modifying a new base clause: "While driving a huge truck down the freeway, Jim was watchful." As the various grammatical structures (transformations) were introduced and imitated (partly through the use of cued sentence-combining exercises, but mainly through the incremental or cumulative technique described above), appropriate punctuation was noted—always emphasizing the role of punctuation in setting off one kind of structure from another to achieve clarity. In the remainder of the course, students wrote essays and engaged in traditional classroom activities, while continuing to experiment (make analogies and extrapolations) in response to instructions such as "Write a sentence that has at least five free modifiers, at least two of which are parallel." The use of free modifiers to add details and to make transitions within and between paragraphs was emphasized both in class discussions and in marking of essays.

To compare the two groups, two measures were used on a pre-and-post basis. The first was a 90-item punctuation test with a previously-established Kuder-Richardson r_{20} reliability of .9 (Broadhead, 1980). In each item of the test,

students were presented with a sentence in which a slash mark occurred; for each slash mark, students were to select appropriate punctuation (or absence of punctuation) from five multiple-choice options. The punctuation test thus measured the students' ability to recognize and punctuate the following grammatical structures: (a) a base clause followed by another base clause (calling for a semicolon); (b) a base clause followed by a repeating or elaborating base clause (calling for a colon); (c) elements in a series (calling for commas); (d) elements in a complicated series following a colon (calling for semicolons); (e) bound elements (calling for no punctuation); and (f) the following twelve kinds of free modifier (usually calling for a comma if they occur before the base clause, for commas or dashes when occuring in the middle of a base clause, and for a comma or a dash when occuring after the base clause):

Verb clusters (four kinds):	Whistling softly, Jim opened the door.
	Startled by the noise, Jim opened the door.
	To get outside, Jim opened the door.
	As is well known, Jim opened the door.
Noun clusters (two kinds):	An expert repairman, Jim opened the door.
	Jim opened the following: a door, a window, and a sod
Adjective clusters:	Curious about the noise, Jim opened the door.
Adverb clusters:	Slowly and carefully, Jim opened the door.
Prepositional phrases:	After a while, Jim opened the door.
Absolutes:	His hands trembling, Jim opened the door.
Subordinate clauses:	When he heard the noise, Jim opened the door.
Relative clauses:	Jim opened the door, which the wind had blown shut.

Free modifiers such as "however" and "also" were counted as adverb clusters. On the test, free modifiers appeared in initial, middle, and final positions relative

to the base clause. Since statistical analysis had previously shown that two forms of the test (called the Diagnosis of Syntax and Punctuation Awareness, or DSPA) were interchangeable, Form A was given to all sections as a pre-test and Form B as a post-test.

A second pre-and-post measure of syntactical performance was a pair of sentence-combining or "rewriting" tasks--referred to by Swan (1978) as "controlled stimulus passages," or CSPs. The first of these, entitled "The Chicken," was a narrative sequence devised by Hunt (1977). The second, entitled "The Nightingale," was another narrative sequence of similar length, devised by the researchers to provide roughly similar opportunities for clause development and free modifier formation:

> A man lived in a house. The house was pleasant. He was young. He lived alone. The house was in a forest. The forest was dark. The house was deep in the forest. He found berries. He found nuts. He ate the berries. He ate the nuts. One day he was walking in the forest. He heard something. A nightingale was singing a melody. The melody was sweet. He made a chair. The chair was rough. He place the chair in a clearing. He listened to the nightingale. The sun went down. He went home. The next day came. He went to the clearing again. He sat in his chair. The nightingale sang her melody. The melody was sad. The melody was beautiful. The sun set. He went home again. The night came. It was late. An idea struck the man. He gathered some wood together. He sliced the wood into strips. The strips were springy. He made a cage. He planned something. He would trap the nightingale. He would keep her in his house. He caught her. He put her in the cage. She got sad. She got listless. She refused to eat. She refused to drink. She sang no melodies. Several days passed. The man

thought something. He could let the nightingale go free. She would be able to do things. She could fly through the forest. She could make her own nest. She might sing to him again. He was sad. He was hopeful. He took the cage back to the clearing. He set loose the nightingale. She was happy. She flew to the top of a tree. She began to sing again. She filled the forest with beauty. The man was a little happy too.

"The Chicken" was used as a pre-test (referred to as "Pre-CSP" in the tables) and "The Nightingale" was used as a post-test ("Post-CSP").

Since some elements of sentence-combining technique were used in the experimental treatment, so that students in those sections were to some extent able to "practice" such rewriting exercises, we also collected the students' final essay of the semester--the "exit essay," a departmentally administered expository essay on a common topic, written in two hours under test conditions by all sections during the same final-exam period. These essays were analyzed to see if results from the sentence-combining tasks would be echoed in the students' free writing.

All three writing samples—the pre-and-post CSPs and the exit essay--were analyzed to determine the frequency, variety, length, variations in length, and punctuation of the grammatical structures listed above. For both control and experimental sections, group means were calculated for the following:

1. The number of free modifiers, expressed as a percentage of all structures (i.e., of the total number of free modifiers and the various kinds of base clauses, with bound subordinate and relative clauses counted as part of the structure they modified), and including subtotals of initial-, middle-, and final-position free modifiers.
2. The number of words in free modifiers, expressed as a percentage of the total number of words in all structures, and including subtotals by position.

3. The variety of kinds of free modifiers used, expressed as a percentage of the twelve kinds listed above.
4. The variety of types of grammatical structure used, expressed as a percentage of 44 types--counting each of the three positions of each kind of free modifier as a different type, and also counting coordinate clauses, added clauses (punctuated by a semicolon), repeating clauses (punctuated by a colon), enclosed clauses (punctuated by dashes or parentheses), quote-introducing clauses (such as "he said"), and bound subordinate and relative clauses, for a total of 44 types of grammatical structure.
5. The mean length of base clauses (in words).
6. The standard deviation of each student's base clauses from each student's base clause mean (as opposed to the standard deviation of students' means around the group mean, which is the more conventional statistic reported); this affords a measure of variability within each student's writing, rather than a measure of the distribution of individual means around a group mean.
7. The mean length of T-units (in words).
8. The standard deviation of each student's T-units from each student's T-unit mean (as in item 6 above).
9. The mean length of sentences (in words).
10. The standard deviation of each student's sentences from each student's sentence mean (as in items 6 and 8 above).
11. The number of clauses per T-unit.
12. The difference (in number of words) between the base clause mean and the T-unit mean; this reflects the amount of words in free modifiers by consolidating data about the frequency of free modifiers (including

multiple modification, when two or more free modifiers occur in a single T-unit, and the average length of free modifiers).

Finally, exit essays were scored on a five-point scale (five high) by teachers and by independent readers. In accordance with procedures of the school's composition program, each experimental and control class's teacher graded his or her students' essays, giving equal weight to thesis and development of ideas, organization, clarity of expression, diction, and "mechanics" (including punctuation). Each essay was also read by a neutral teacher not involved in the experiment (each netural teacher reading one experimental class's and one control class's essays), and the scores of the class and neutral teachers were averaged. Since teacher bias and the effect of conscious or unconscious "curving" of scores for each class were uncontrolled in this method of scoring, four teachers from other schools also scored the essays, using the same five-point scale and the same scoring guidelines. Essays from both control and experimental groups were intermixed and then presented to readers in batches of ten; all four readers' scores for each essay were then averaged.

Results

Results of the pre-CSPs (before-treatment sentence-combining exercises) are shown in Table 1, based on data for the 36 control-group and 62 experimental-group students who (a) did not withdraw from the course or from school and who (b) responded to all five diagnostic instruments (pre-CSP, pre-DSPA, post-CSP,

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Insert Table 1 about here.

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post-DSPA, exit essay). Student withdrawals from class or school were at

the 38 percent level for both groups, reflecting typical enrollment practices at that time in our open-admission, public university during the Spring semester (when students may differ from the normal freshman-composition population in ability and/or interest). The difference in size of the control and experimental groups (46 percent of all control-class students who completed the course, as opposed to 80 percent of all experimental-class students) is apparently due to random fluctuations in attendance on the days that the measurement instruments were administered, although it is possible that impending "administration days" (which were unannounced) might have been positively or negatively "signalled" by instructors. In any event, the data in Table 1 indicate that, before instruction began, there were no statistically significant differences between the control and experimental groups in seventeen of the eighteen variables examined, although the experimental group is slightly but consistently "higher" (i.e., more complex or varied) in the direction sought by the experimental treatment, and is significantly higher in the percentage of words in final-position free modifiers.

In the post-CSP (Table 2), however, group *t* tests show significant differences between control and experimental groups on ten of the eighteen variables, including free-modifier structures, free-modifier words, and T-unit length. The

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Insert Table 2 about here.

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experimental group's increase of .9 (to a mean of 12.8) compares with the .8 increase (to 13.1) reported by Swan (1978) in a study using CSPs. The control group's T-units predictably decrease slightly, as in Stewart's CSP tasks (1978) and in the free writing of Morenberg, Kerek, and Daiker's control group (1978). Furthermore, paired *t* tests (one-tailed) of the pre- and post-CSPs for the experimental group show significant within-group change on thirteen of the eighteen

variables: total free-modifer structures (S = .001), intial FM structures (.022), final FM structures (.001), FM words (.027). initial FM words (.014), middle FM words (.000), final FM words (.028), vareity of FM kinds (.006), variety of structure types (.024), standard deviation of base clauses (.000), T-unit length (.012), sentence length (.050), and difference between base clause and T-unit length (.008).

The exit essay (free writing) also showed statistically significant differences between control and experimental groups (Table 3). The experimental group's 16.5 T-unit mean compares with sentence-combining experimental

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Insert Table 3 about here.

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group means of 16.1 (Morenberg, Kerek, and Daiker, 1978) and 16.4 (Swan, 1978) and with Faigley's experimental group mean of 15.7 produced by generative rhetoric. The control group's 14.1 mean was slightly lower than that of Morenberg, Kerek, and Daiker's control (15.0) but slightly higher than Faigley's control mean of 13.5. In addition to the control/experimental group differences in T-unit length, significant differences also appeared in the desired areas of percentage of free modifiers, percentage of free-modifier words, sentence length, variety of free modifiers, and variability of length (as shown by standard deviations of base clauses, T-units, and sentences). Correlations between the post-CSP and the exit essay were significant in ten areas (one asterisk indicating significance at .05 level, two at .01 level, three at .001 level): percentage of free modifiers (.45***), free-modifier words (.33***), free modifier vareity (.27**), structure variety (.40***), base clause mean (.21*), T-unit mean (.38***) and standard deviation (.19*), sentence mean (.30***) and standard deviation (.22*), and difference between base clause and

T-unit mean (.39***).

Furthermore, the experimental group's distribution of kinds of free modifiers in the exit essay (as shown in Table 4) was closer than the control

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Insert Table 4 about here.

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group's to the "academic norm" observed in the writing of 123 articles in professional journals (see Broadhead, Berlin, and Klein) and to the "teachers' norm," which is based on the published writing of one of the researchers, and which reflects the literary norm favored by Christensen.

In the important area of punctuation, group t tests showed no significant differences between control and experimental groups on the 90-point pre-DSPA (43.2 versus 44.8 for the experimental group) or on the percentage of appropriate punctuation on the pre-CSP (79.4 for control, 77.6 for experimental). On the post-DSPA, however, there were significant differences between the control group's 43.9 mean and the experimental group's 57.3--a 13.4 point difference significant at the .000 level. Similarly, on the post-CSP, the percentage of appropriate punctuation was 78.1 for the control group, 82.2 for the experimental group--a 4.1 difference significant at the .024 level. And a like difference was observed on the exit essay, where the percentage of appropriate punctuatio was 81.1 for control, 85.2 for experimental--a 3.4 difference significant at the .031 level. In short, the experimental group obtained a higher percentage of appropriate punctuation on all three post-treatment measures: DSPA, CSP, exit essay. The correlation (control and experimental groups combined) between the post-CSP punctuation and the exit essay punctuation was .50***. Post-DSPA obtained a correlation of .31*** with post-CSP punctuation and .45*** with exit essay punctuation, apparently justifying the use of the DSPA as a diagnostic instrument.

Finally, while the teachers' evaluations showed no differences between control and experimental groups either on the exit essays (both at 3.3 on a five-point scale) or on final grades (both at 2.5 on a four-point scale), the average exit essay scores of the independent readers showed a difference of .3 (3.0 for control, 3.3 for experimental), a difference significant at the .046 level. Both teachers and readers appear to have been less influenced in their scores by percentage of free modifiers (correlation of .08 for teachers and .15 for readers) than by T-unit length (.12 for teachers and .23** for readers), T-unit standard deviation (.20* for teachers and .23* for readers), sentence length (.12 for teachers and .29** for readers), sentence standard deviation (.15 for teachers and .19* for readers), difference between base clause and T-unit means (.13 for teachers and .20* for readers), and, most dramatically, percentage of appropriate punctuation (.52*** for teachers and .53*** for readers). Particularly for independent readers, then, the measures of length, variability, variety, and punctuation correlate to some extent with overal evaluation.

Conclusions

These results appear to support several conclusions in response to our main research questions.

First, judged solely by gains in T-unit length, our "incremental" version of generative rhetoric (also utilizing a small amount of sentence-combining in illustrations and exercises) yields results similar to those obtained by "pure" sentence-combining and generative rhetoric. Also as reported for those methods, greater complexity as measured by T-unit length is accompanied by higher overall evaluations of student writing.

Second, the experimental treatment increased the difference between base clause and T-unit means--a difference, again, which Christensen thought important to a good mature style. Further, the data appear to support Christensen's belief that such a difference is good, given the correlation between readers' evaluations and base clause/T-unit differences. However, this correlation is relatively low (.20, S = .05), so that convincing support for Christensen's claim must await a study which shows that, when presented with T-units of identical length, evaluators prefer those in which length is achieved by means of relatively short base clauses and relatively high frequency of free modifiers. On the other hand, Christensen's emphasis on the percentage of free-modifier words (as opposed to free-modifier structures, which we had thought equally important) seems to be supported by our data as by Faigley's. In this regard, Table 4 shows that the experimental group achieved a higher percentage of final-position words (despite the same percentage of final-position free modifiers) because of the kinds of free modifiers used there: absolutes, subordinate clauses, relative clauses, and noun clusters (clusters which, like this one, are frequently expanded by a bound relative clause).

Third, the experimental treatment increased the variability of students' writing. Given the correlations obtained between overall evaluations and the standard deviations of T-units and sentences, the data support the belief that variability as well as length is an important aspect of syntactic complexity.

Fourth, the experimental treatment increased the syntactic variety of students' writing. Given the correlations between overall evaluation and the percentage of kinds of free modifiers and types of structures used in the free writing, the data support the belief that variety is an important aspect of complexity. In good writing (though not in all complex writing), relatively

greater length is accompanied by relatively greater variety.

Finally, the experimental treatment increased the percentage of appropriate punctuation. Furthermore, the relatively high correlation between overall evaluation and percentage of appropriate punctuation supports the belief (apparently assumed by previous sentence-combining and generative rhetoric research) that punctuation is an important aspect of syntax that is not only complex but also good.

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Table 1. Pre-CSP: Differences of Experimental from Control on 18 Variables

(Significance by Group *t* Test, One-tailed, Separate Variance Estimate)

	Control (N = 36)	Experimental (N = 62)	Difference		F Value
Percentage of FMs (All)	31.9	34.9	+ 3.0	NS	1.18
Initial Position	20.3	22.0	+ 1.7	NS	1.33
Middle Position	4.2	4.4	+ .2	NS	1.17
Final Position	7.4	8.6	+ 1.2	NS	2.01
Percentage of FM Words (All)	20.8	23.3	+ 2.5	NS	1.02
Initial Position	12.3	12.2	+ .1	NS	1.84
Middle Position	3.2	3.5	+ .3	NS	1.12
Final Position	5.4	7.6	+ 2.2	*	3.06
Variety of FMs (% of 12)	40.0	42.0	+ 2.0	NS	1.28
Variety of Structures (% of 44)	23.9	24.7	+ .8	NS	1.08
Base Clause Mean	8.9	9.1	+ .2	NS	1.83
Base Clause Standard Deviation	3.6	3.8	+ .2	NS	1.12
T-Unit Mean	11.4	11.9	+ .5	NS	1.10
T-Unit Standard Deviation	4.9	5.2	+ .3	NS	1.46
Sentence Mean	14.3	14.4	+ .1	NS	1.25
Sentence Standard Deviation	5.3	5.7	+ .4	NS	1.22
Clauses Per T-Unit	1.2	1.2	---	NS	1.33
Base Clause/T-Unit Difference	2.4	2.8	+ .4	NS	1.15

* S = .05 ** S = .01 *** S = .001

Table 2. Post-CSP: Differences of Experimental from Control on 18 Variables

(Significance by Group *t* Test, One-tailed, Separate Variance Estimate)

	Control (N = 36)	Experimental (N = 62)	Difference	F Value
Percentage of FMs (All)	31.9	41.0	+ 9.1 ***	2.24
Initial Position	19.3	25.1	+ 5.8 **	2.66
Middle Position	2.7	3.8	+ 1.1 *	1.67
Final Position	10.0	12.1	+ 2.1 *	1.68
Percentage of FM Words (All)	18.8	26.8	+ 8.0 **	4.21
Initial Position	11.0	15.4	+ 4.4 **	5.00
Middle Position	1.3	1.6	+ .3 NS	1.21
Final Position	6.4	9.8	+ 3.4 **	3.22
Variety of FMs (% of 12)	44.0	46.1	+ 2.1 NS	1.42
Variety of Structures (% of 44)	26.1	26.7	+ .6 NS	1.77
Base Clause Mean	9.2	9.3	+ .1 NS	1.43
Base Clause Standard Deviation	5.0	4.5	- .5 NS	3.31
T-Unit Mean	11.4	12.8	+ 1.4 **	1.76
T-Unit Standard Deviation	5.7	5.6	- .1 NS	2.95
Sentence Mean	14.0	15.3	+ 1.3 *	3.26
Sentence Standard Deviation	6.2	6.0	- .2 NS	1.61
Clauses Per T-Unit	1.2	1.2	---	1.07
Base Clause/T-Unit Difference	2.2	3.5	+ 1.3 ***	4.64

* S = .05 ** S = .01 *** S = .001

Table 3. Exit Essay: Differences of Experimental from Control on 18 Variables

(Significance by Group t Test, One-tailed, Separate Variance Estimate)

	Control (N = 36)	Experimental (N = 62)	Difference	F Value
Percentage of FMs (All)	33.2	38.7	+ 5.5 **	1.22
Initial Position	18.2	19.4	+ 1.2 NS	1.40
Middle Position	3.2	6.3	+ 3.1 ***	2.92
Final Position	11.8	13.1	+ 1.3 NS	1.24
Percentage of FM Words (All)	21.5	25.1	+ 3.6 *	1.67
Initial Position	10.0	10.2	+ .2 NS	1.14
Middle Position	1.4	3.3	+ 1.9 ***	6.06
Final Position	10.1	11.7	+ 1.6 NS	1.50
Variety of FMs (% of 12)	44.7	49.2	+ 4.5 *	1.21
Variety of Structures (% of 44)	28.4	30.8	+ 2.4 NS	1.40
Base Clause Mean	11.2	12.3	+ 1.1 NS	1.51
Base Clause Standard Deviation	5.0	5.8	+ .8 **	1.42
T-Unit Mean	14.1	16.5	+ 2.4 ***	1.63
T-Unit Standard Deviation	6.5	7.5	+ 1.0 **	2.27
Sentence Mean	16.9	19.9	+ 3.0 ***	1.38
Sentence Standard Deviation	7.4	8.4	+ 1.0 *	1.69
Clauses Per T-Unit	1.4	1.4	---	1.12
Base Clause/T-Unit Difference	2.9	4.2	+ 1.3 **	2.48

* S = .05 ** S = .01 *** S = .001

Table 4. Frequency of Free Modifiers in Control and Experimental Exit Essays, by Kind and Position (Number of Each Kind Expressed as Percentage of All Structures)[1]

	Control (N = 38)	Experimental (N = 66)	Academic (N = 123)	Teacher (N = 6)
Verb Clusters (Four Kinds)	4.27	4.40	5.98	10.84
Initial	1.58	1.68	1.81	2.41
Middle	.28	.76	1.38	3.21
Final	2.41	1.96	2.79	5.22
Noun Clusters (Two Kinds)	5.13	5.42	8.12	6.82
Initial	1.73	.98	.36	0.00
Middle	.92	1.42	4.92	1.61
Final	2.48	3.02	2.84	5.22
Adjective Clusters	.74	.99	1.25	2.41
Initial	.16	.21	.15	0.00
Middle	.25	.52	.72	.40
Final	.33	.26	.38	2.01
Adverb Clusters	5.49	7.68	7.63	4.42
Initial	3.65	5.36	4.83	2.41
Middle	.60	1.04	2.00	1.61
Final	1.24	1.28	.80	.40
Prepositional Phrase Clusters	8.33	8.82	13.24	20.88
Initial	5.63	5.83	8.18	10.84
Middle	1.25	1.64	3.09	5.62
Final	1.45	1.35	1.97	4.41

-- Table continues --

Table 4, continued

	Control (N = 38)	Experimental (N = 66)	Academic (N = 123)	Teacher (N = 6)
Absolutes	.25	.46	.75	2.01
Initial	.15	.29	.14	0.00
Middle	.10	.03	.17	.80
Final	.00	.14	.44	1.20
Subordinate Clauses	7.61	7.71	7.08	7.63
Initial	5.39	5.28	3.65	5.22
Middle	.26	.37	.88	1.61
Final	1.97	2.26	2.55	.80
Relative Clauses	1.76	2.05	2.35	5.62
Initial	.21	.03	.13	0.00
Middle	.07	.43	.50	2.01
Final	1.48	1.60	1.72	3.61

[1] Kind and position totals on this table vary slightly from those on Table 3, due to the inclusion of data for six students who wrote the exit essay but did not respond to other diagnostic instruments.